

The Digital Trust Gap: A Qualitative Study of Leadership Resistance in Pakistani SMEs

Dr. Rabia Ishrat

Professor, Department of Business Administration, Sarhad University, Peshawar.

ABSTRACT

The integration of Supply Chain Technology (SCT) is a primary driver of global industrial competitiveness, yet Small and Medium Enterprises (SMEs) in Pakistan remain tethered to traditional manual practices. This qualitative study explores the multifaceted barriers to SCT adoption through the lenses of the Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) theory. Utilizing semi-structured interviews with 20 SME owners and supply chain experts across Lahore, Karachi, and Islamabad, the research identifies a hierarchy of inhibitors. Key findings suggest that while financial constraints are significant, the "internal bottleneck"-comprising leadership apprehension, cultural resistance to transparency, and a severe technical skills gap-acts as the primary deterrent. Furthermore, external systemic failures, including unreliable digital infrastructure and a lack of government-led fiscal incentives, exacerbate the digital divide. The study concludes with a strategic framework for "Incremental Digitalization," recommending that SMEs adopt scalable cloud solutions while policymakers focus on digital literacy and infrastructure stability.

Keywords: Qualitative Research, Supply Chain Technology, SMEs, Pakistan, Digital Transformation, Leadership Apprehension, ERP, SME Policy.

1: Introduction

1.1 Background of the Study

Small and Medium Enterprises (SMEs) are the lifeblood of Pakistan's economic architecture, contributing nearly 40% to the national GDP and providing employment to over 80% of the non-agricultural workforce. In the contemporary global economy, the efficiency of a firm is no longer dictated solely by production capacity but by the agility and visibility of its supply chain. Supply chain

technologies, ranging from basic Inventory Management Systems to sophisticated Enterprise Resource Planning (ERP), Radio-Frequency Identification (RFID), and Internet of Things (IoT) sensors, have redefined operational excellence globally.

In Pakistan, however, the SME sector is characterized by "technological stagnation." While large-scale textile and automotive firms have embraced Industry 4.0, the SME clusters in cities like Sialkot, Gujranwala, and Karachi remain reliant on ledger-based tracking, verbal agreements, and informal communication. This gap limits their ability to integrate into Global Value Chains (GVCs), resulting in reduced competitiveness, higher operational waste, and an inability to meet the rigorous data standards of international buyers.

1.2 Problem Statement

Despite the documented advantages of SCT, the adoption rate among Pakistani SMEs is alarmingly low. Existing literature often focuses on quantitative financial metrics, yet these fail to capture the underlying socio-cultural and behavioral reasons for technology rejection. There is a lack of deep qualitative insight into why, even when capital is available, SME owners remain hesitant to digitalize. The problem lies in a complex interplay of "fear of transparency," "leadership apprehension," and a "systemic lack of trust" in digital infrastructure. This research addresses the absence of a comprehensive qualitative model that explains these barriers within the specific socio-economic and cultural context of Pakistan.

1.3 Research Objectives

1. **To Explore Perceptions:** Understand how SME owners perceive the "usefulness" and "ease of use" of supply chain tools in their daily operations.
2. **To Identify Internal Barriers:** Investigate organizational culture, paternalistic leadership styles, and employee resistance to digital monitoring.
3. **To Examine External Constraints:** Analyze the impact of government policy, the tax system's influence on transparency, and digital infrastructure reliability.
4. **To Propose a Strategic Framework:** Provide actionable, qualitative-based recommendations for SMEs and policymakers to bridge the digital divide.

2: Literature Review and Theoretical Framework

2.1 Theoretical Foundations of Technology Adoption

The study is grounded in three foundational theories that explain the qualitative nuances of why organizations choose to adopt or reject new systems.

2.1.1 The Technology Acceptance Model (TAM): A Critical Re-Contextualization

The Technology Acceptance Model (TAM), as pioneered by **Davis (1989)**, posits that an individual's behavioral intention to adopt a system is driven by two primary internal beliefs: **Perceived Usefulness (PU)** and **Perceived Ease of Use (PEOU)**. In a scholarly sense, PU measures the user's subjective probability that using a specific application will increase their job performance within an organizational context, while PEOU refers to the degree to which the user expects the target system to be free of effort. However, when applying TAM to the current study of Pakistani SMEs, these variables undergo a "contextual distortion" that explains the persistent resistance to digitalization.

The data suggests that **Perceived Usefulness** is not a stagnant variable but is filtered through a lens of institutional distrust. While global literature highlights PU as a motivator for cost reduction, Pakistani SME owners often perceive ERP and supply chain tools as **"Digital Panopticons."** There is a critical tension where the "usefulness" of transparency is viewed as a threat to the informal economy. For many owners, a system that tracks every transaction is not seen as a tool for efficiency, but as an unnecessary electronic surveillance mechanism that could potentially expose internal margins to tax authorities or competitors. Furthermore, in the **"Seth Culture"** (paternalistic management) identified in this study, PU is diminished because owners believe that their personal, intuitive knowledge of the supply chain is superior to data-driven insights. Thus, the technology fails the PU test because it does not offer a perceived value that outweighs the perceived risk of becoming too transparent.

Simultaneously, **Perceived Ease of Use** is critically hindered by a **"Socio-Technical Mismatch."** Most global supply chain solutions are designed for a Western, English-speaking, and highly literate workforce. For the SME workforce

in clusters like Gujranwala or Sialkot, the absence of localized language support (Urdu) creates a high cognitive load; the technology is not "easy to use" because it does not "speak" the language of the shop floor. Current interfaces often require a level of digital fluency that the non-technical workforce lacks, leading to "**Technostress**" and a complete rejection of the system. PEOU, therefore, becomes the primary "gatekeeper" barrier; even if an owner is convinced of a system's utility, the perceived effort required to train a low-skilled workforce acts as a total deterrent. Consequently, for Pakistani SMEs, PEOU influences PU more strongly than in developed markets. If the system is too hard to use, the owner quickly dismisses its potential benefits, suggesting that digitalization in Pakistan is not a procurement problem, but a psychological alignment problem between the software's design and the user's socio-cultural reality.

2.1.2 Diffusion of Innovation (DOI): Cultural Compatibility and the Trust Network

Rogers (2003) defines the Diffusion of Innovation as the process by which an innovation is communicated through certain channels over time among the members of a social system. For Pakistani SMEs, the "social system" is not a formal corporate structure but a collection of informal, trust-based networks often rooted in family ties or localized industrial clusters, such as the surgical cluster in Sialkot. In this study, the DOI framework is critically expanded to include the dimensions of **Compatibility, Complexity, and Observability**

A fundamental "**Compatibility Crisis**" exists because Pakistani SMEs are traditionally managed through *Zabaan* (verbal commitment) and informal bookkeeping. Supply Chain Technologies (SCT), which demand rigid data entry and standardized protocols, are perceived as culturally alien. Critically, the innovation is often rejected because it is incompatible with the power dynamics of the firm. The "Seth" logic assumes a centralized and opaque hierarchy, and technology is viewed as an attempt to replace the owner's intuition with an algorithm—a shift viewed as a loss of identity and authority.

This cultural friction is exacerbated by the "**Dependency Trap**" associated with systemic complexity. Beyond the software interface, the process re-engineering

required to move from manual registers to a cloud-based ERP is a massive operational bottleneck. SME owners fear that adopting complex SCT will make them "hostages" to IT consultants or vendors. In a market where technical support is fragmented, the complexity of the system is seen as a liability—if the system crashes and the expert is unavailable, the entire supply chain halts. This perceived complexity acts as a protective barrier, keeping owners within the safety of manual systems they can control personally.

Finally, the **"Trialability" Deficit** and low observability hinder the spread of technology. In Pakistan, the competitive environment is highly guarded, and successful firms rarely share their technological "secret sauce" due to fear of imitation or regulatory attention. This leads to a lack of visible success stories within the SME sector. Furthermore, Rogers emphasizes that innovations that can be tried on a limited basis represent less risk, yet most providers in Pakistan push for high-cost, full-scale implementations. The absence of "sandbox" environments prevents owners from testing the technology without risking their entire operational budget. Ultimately, SCT adoption in Pakistan is not a linear path of "buying software," but a non-linear struggle of cultural negotiation where technology must "unlearn" its Western assumptions to fit the localized requirements of trust and centralization.

2.1.3 Resource-Based View (RBV): Digitalization as a Strategic Asset

The **Resource-Based View (RBV)**, primarily developed by **Barney (1991)**, suggests that a firm's performance and competitive advantage are determined by its internal resources. For a resource to provide a sustained competitive advantage, it must meet the **VRIN criteria**: it must be **Valuable, Rare, Inimitable, and Non-substitutable**. In the current study, RBV is utilized to critically analyze why Pakistani SMEs struggle to transform SCT into a strategic asset. The theory shifts the focus from the "tool" to the "capability"—the firm's ability to use the tool effectively.

A central tenet of RBV is that possessing a resource, like an ERP system, does not equate to having a competitive advantage. Critically, many Pakistani SMEs treat SCT as a "plug-and-play" commodity rather than a complex capability. If an SME simply buys an off-the-shelf solution that every competitor can also buy, the

resource is not "Rare." The true value lies in **Dynamic Capabilities**—the firm's ability to integrate and reconfigure internal competences to address the volatile market of Pakistan. Without these capabilities, high-cost technology remains an underutilized "dormant asset."

Furthermore, **Human Capital** serves as the most significant source of inimitability. In this study, the "Inimitable" resource—skilled personnel who understand both supply chain logistics and digital interfaces—is found to be critically missing. Because large corporations aggressively recruit top-tier talent, SMEs are left with a **"Knowledge Void."** There is also a social complexity to training; the "Tacit Knowledge" held by old-guard employees is difficult to translate into a digital resource, creating a bottleneck where the most valuable human resources are those most resistant to the new system.

This resistance is rooted in **Path Dependency** and **Organizational Readiness**. Many Pakistani SMEs have decades of history rooted in manual, informal operations, making the shift to a formal supply chain difficult to implement. Critically, the "Owner's Vision" is the primary resource. If the owner's leadership style is not aligned with digital transparency, the firm lacks the readiness required to make SCT a viable resource. Without "Leadership Buy-in," the technology fails the VRIN test because it cannot be effectively organized to capture value. Thus, SCT adoption fails when treated as a purchased product rather than an evolved capability combined with localized knowledge, agile leadership, and digital-manual hybrid workflows.

2.2 Deep-Dive into Technological Barriers

Beyond theoretical frameworks, specific technologies face unique hurdles in the Pakistani landscape. **Cloud Computing**, for instance, faces a strong **"Data Sovereignty"** fear. SME owners express significant concern that trade secrets and supplier lists—their primary competitive edge—could be compromised or accessed by third parties once moved to the cloud. This is compounded by the **"Transparency Trap"** in logistics. While GPS tracking and IoT provide absolute visibility, this is often viewed as a risk in an environment where a significant portion of the economy remains undocumented. Owners fear that digital footprints will lead

to increased scrutiny from regulatory and tax authorities, creating a socio-political barrier to adoption.

Finally, the implementation of **RFID and Internet of Things (IoT)** is hindered by "**Environmental Fragility.**" High-tech sensors require stable power and specialized maintenance. For an SME in an industrial estate with 8 hours of daily load-shedding, the perceived reliability of IoT is extremely low. Consequently, traditional manual counting remains the "safer" choice. As highlighted by **Saunders et al. (2019)**, the physical and regulatory environment of a developing nation often dictates the success of technological adoption more than the capabilities of the hardware itself.

3: Research Methodology

3.1 Qualitative Research Design and Philosophical Paradigm

This study adopts a **qualitative, phenomenological research design** to explore the complex barriers to supply chain technology adoption within the Pakistani SME sector. Rather than seeking to quantify the frequency of these barriers, the phenomenological approach allows for a deep, systematic exploration of the "lived experiences" and subjective perceptions of SME owners and managers. The study is situated within the **interpretivist paradigm**, which posits that reality is socially constructed and can only be understood through the meanings that individuals assign to their experiences. This is particularly relevant in the Pakistani context, where business decisions are often influenced by deeply ingrained socio-cultural values and informal power structures. By prioritizing the "human voice" over statistical data, this methodology uncovers the nuanced psychological and organizational resistance that quantitative surveys often overlook.

3.2 Target Population and Purposive Sampling Strategy

The target population for this research consists of registered Small and Medium Enterprises (SMEs) operating within major industrial hubs, specifically Lahore, Karachi, and Faisalabad. To ensure the collection of "information-rich" data, a **purposive sampling strategy** was employed, supplemented by **snowball sampling** to access hard-to-reach "Seth" (paternalistic) business owners. The final sample size of 20 participants included 12 SME owners/managers across the textile,

manufacturing, and retail sectors, 4 supply chain consultants with experience in local digital transformations, and 4 technology vendors. This diversity in the sample ensured a **triangulation of perspectives**, allowing the researcher to cross-verify the claims made by business owners against the practical observations of technology implementers and consultants.

3.3 Data Collection: Semi-Structured Depth Interviews

Primary data was collected through **semi-structured, in-depth interviews**, which provided the flexibility to probe deeper into unexpected themes such as "fear of transparency" and "leadership apprehension." Interviews were conducted in a hybrid of **English and Urdu**, a critical methodological choice that allowed participants to express complex emotions and cultural anxieties—such as the "trust deficit" regarding government or competitors—using local idioms and business metaphors. Each interview lasted between 45 to 60 minutes and was digitally recorded with the participants' consent. The researcher utilized an interview guide rooted in the TAM and DOI frameworks but remained open to emergent themes, ensuring that the dialogue remained a naturalistic exchange rather than a rigid interrogation.

3.4 Data Analysis: Systematic Thematic Content Analysis

The qualitative data was analyzed using **Thematic Content Analysis** through a multi-stage coding process. Initially, the recorded interviews were transcribed verbatim and subjected to "open coding," where raw segments of text were identified for their relevance to technology barriers. These initial codes were then grouped into "axial codes" to identify relationships between concepts, such as how "lack of infrastructure" directly reinforces "leadership skepticism." Finally, "selective coding" was used to integrate these categories into overarching themes that align with the research objectives. This systematic process ensured that the findings were grounded directly in the participants' narratives, moving from specific observations to broader scholarly insights regarding the "Socio-Technical Mismatch" in Pakistan.

3.5 Trustworthiness and Credibility (Qualitative Rigor)

To ensure the academic rigor and **trustworthiness** of the findings, the study adhered to the criteria of credibility, transferability, and confirmability. **Credibility** was established through "member checking," where a summary of the findings was

shared with a subset of participants to verify that the interpretations accurately reflected their perspectives. To enhance **transferability**, the researcher provided "thick descriptions" of the industrial contexts and cultural nuances of the Pakistani SME landscape, allowing future researchers to determine the applicability of these results to other emerging markets. **Confirmability** was maintained through an "audit trail," documenting every stage of the data collection and analysis process to ensure that the conclusions were derived from the data and not from researcher bias.

3.6 Ethical Considerations

The study was conducted with strict adherence to ethical standards. All participants provided **informed consent** and were briefed on the study's purpose and their right to withdraw at any time without consequence. Given the sensitive nature of the "Transparency Trap" and financial barriers, **strict anonymity and confidentiality** were maintained; participants and their firms were assigned pseudonyms (e.g., Participant A, Firm X) to protect them from any potential commercial or regulatory repercussions. Furthermore, all data was stored on a secure, encrypted drive, ensuring that the trust established during the interviews was preserved throughout the research lifecycle.

4: Results and Discussion

4.1 Theme 1: Leadership Apprehension and the "Trust Deficit"

The qualitative analysis reveals that the primary barrier to supply chain technology (SCT) adoption is not technical, but psychological, rooted in a pervasive "Trust Deficit" among SME leadership. During interviews, owners consistently described a deep-seated fear that digitalization would compromise the confidentiality of their business operations. This "Transparency Trap" is particularly acute in the Pakistani context, where firms often operate within a semi-formal economy. Owners expressed concern that digital footprints created by ERP or cloud systems could be accessed by competitors or government regulatory bodies, potentially exposing sensitive margin data or supplier networks. As one participant from the Lahore textile cluster noted, "information is our only shield in this market; if we put it on a server we don't own, we are effectively handing our secrets to the world." Consequently, the **Perceived Usefulness (PU)** of the technology is overshadowed by the perceived risk of

exposure, leading to a strategic choice to remain manual to preserve operational opacity.

4.2 Theme 2: The "Seth Culture" and Centralized Control

A recurring theme throughout the interviews was the influence of the "Seth Culture"—a paternalistic management style where all significant decisions and data are centralized in the hands of the owner. In this organizational structure, SCT is viewed as a disruptive force that threatens the traditional power hierarchy. By decentralizing data access and providing real-time visibility to middle management, technology democratizes information, which many owners perceive as a loss of personal authority. The study finds that leadership apprehension is often driven by the belief that their "intuitive expertise" is superior to algorithmic insights. This reinforces the **Path Dependency (RBV)**, where the firm remains tethered to manual processes not because they are efficient, but because they maintain the owner's absolute control over the supply chain. Technology is thus rejected because it is "Incompatible" with the existing socio-political values of the firm's leadership.

4.3 Theme 3: The Skills Gap and "Passive Sabotage"

The research identifies a severe "Human Capital" crisis that functions as a functional barrier to implementation. SME owners reported a significant difficulty in attracting and retaining IT-literate staff, as most high-tier talent is absorbed by multinational corporations. This creates a "Knowledge Void" within the SME, leaving the implementation of complex systems in the hands of a workforce that is often resistant to change. Critically, the study uncovered instances of "Passive Sabotage," where employees intentionally entered inaccurate data or bypassed digital protocols to prove the system was "unreliable." This resistance is largely driven by a fear of job displacement; workers view SCT as a tool for downsizing rather than an aid for productivity. This highlights a critical **Socio-Technical Mismatch** where the hardware is present, but the organizational culture lacks the readiness to mobilize it as a strategic resource.

4.4 Theme 4: Systemic Infrastructural Fragility

Beyond internal organizational hurdles, the qualitative data points toward a systemic failure of external infrastructure as a deterrent to high-tech adoption. In

industrial zones across Karachi and Faisalabad, participants cited frequent power load-shedding and inconsistent broadband connectivity as "Reliability Killers" for cloud-based and IoT solutions. The **Perceived Ease of Use (PEOU)** is severely diminished when the basic requirements for the technology—electricity and internet—are not guaranteed. Owners expressed that while they recognize the benefits of real-time tracking, the risk of a system "freeze" during a critical shipment window is too high. "In a country where the lights go out four times a day, a cloud system feels like a gamble, not an investment," remarked a logistics manager in Karachi. This environmental uncertainty forces SMEs into a "defensive stance," where they prefer the reliability of traditional, paper-based systems over the fragility of advanced digital tools.

4.5 The Impact of "Facilitating Conditions" on Digital Readiness (UTAUT Integration)

A critical finding of this study, when viewed through the lens of the **Unified Theory of Acceptance and Use of Technology (UTAUT)**, is the profound influence of "Facilitating Conditions" on technology adoption. In the context of Pakistani SMEs, facilitating conditions refer to the external technical and organizational infrastructure required to support a digital supply chain. The qualitative data suggests that even when owners perceive a system as useful (**Performance Expectancy**), they remain hesitant because the environment is non-supportive. The study identifies that without a stable facilitating environment, advanced technology like real-time IoT tracking becomes a liability rather than an asset. This supports the UTAUT premise that the intention to use technology is significantly diminished when the user believes that the necessary infrastructure and technical assistance are unavailable.

4.6 Social Influence and the "Seth" Authority

In addition to infrastructure, the UTAUT construct of "**Social Influence**" plays a specialized role in the Pakistani SME landscape. Unlike the traditional definition, which often focuses on peer-to-peer influence, this study finds that social influence in Pakistan is vertically concentrated in the "Seth" or paternalistic head of the firm. The findings indicate that if the owner displays skepticism or apprehension toward

digital transparency, this sentiment trickles down, creating a firm-wide culture of resistance. Employees perceive that "important others" (the leadership) do not value digital data, thereby reducing their own **Effort Expectancy** and intention to use the system. This centralized social pressure reinforces the manual tradition, as workers align their behavior with the owner's perceived preferences to maintain job security and cultural fit within the organization.

5: Conclusion and Recommendations

5.1 Summary of Research Findings

This study confirms that the implementation of supply chain technology in Pakistani SMEs is a multi-layered challenge that extends far beyond financial constraints. The findings suggest a hierarchy of barriers where psychological and cultural factors, such as leadership apprehension and the "Seth Culture," form the foundation of resistance. These internal hurdles are compounded by a severe skills gap and a workforce prone to passive sabotage. Externally, the lack of a reliable digital infrastructure and a supportive policy environment creates a "vicious cycle" of technological stagnation. By synthesizing **TAM**, **DOI**, **RBV**, and **UTAUT** theories, the research demonstrates that SCT adoption in Pakistan is a process of cultural negotiation rather than a simple procurement of software.

5.2 Theoretical and Practical Contributions

Theoretically, this research extends the **Technology Acceptance Model (TAM)** and **UTAUT** by illustrating how "Perceived Usefulness" and "Facilitating Conditions" are context-dependent. In informal economies, these are viewed through a lens of surveillance and environmental risk rather than just efficiency. Practically, the study provides a roadmap for **"Incremental Digitalization,"** arguing that for technology to be adopted, it must be "culturally compatible" with the trust-based networks of the Pakistani SME.

5.3 Recommendations for Stakeholders

- **For SME Owners:** Shift from a "Total Implementation" mindset to a **"Modular Approach."** Start with simple, user-friendly mobile applications for inventory or communication to build digital trust among staff before investing in full-scale ERPs.

- **For Policymakers:** Develop "**Digital Literacy Centers**" specifically for SME owners to demystify data security and transparency. Furthermore, providing dedicated high-speed internet and stable power to industrial clusters is a prerequisite for any national digitalization strategy.
- **For Technology Providers:** Design "**Offline-First**" and "**Linguistic-Friendly**" (Urdu interface) applications. Software must be resilient to power fluctuations and intuitive for a workforce with varying levels of digital literacy.

5.4 Future Research Directions

Future studies should employ a longitudinal qualitative design to track the progress of SMEs that have successfully navigated these barriers. Additionally, research into the role of "Third-Party Logistics" (3PL) providers as facilitators of technology for SMEs could provide new insights into indirect digitalization pathways in emerging markets.

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